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Inaugural Dissertation

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on

Digestion

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by

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of
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Digestion.

This is a function peculiar to organized bodies, In warm and red blooded animals the nutritive process is performed as in man, and in that respect there exist between them very slight differences. The series of assimilative phenomena commences in the plant by absorption, since it draws from the earth the juices which it is to appropriate to itself. In man the assimilation of alible substances devolves on an apparatus of organs of great complexity, consisting of a long tube extending from the mouth to the anus, and whose length is from five to six times that of the body. The Oesophagus forms the superior portion of this tube and establishes a communication between the mouth and stomach. It is a hollow

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cylinder composed of a muscular tunic and of an internal mucous membrane the use of which is restricted to supplying a fluid to facilitate the progression of the alimentary mass. The Stomach appears as a considerable expansion constituting a kind of bag with two openings, one of which corresponds to the oesophagus, and the other to the first of the small intestines. The Duodenum preserves something of the properties of the stomach. We see in it a curve analogous to that of the stomach and fitted somewhat to retard the passage of the alimentary substances, hence some Anatomists have called it the second stomach.

The Jejunum and Ileon occupy nearly three fourths of the whole length of the digestive canal; they are streighter than the duodenum, and

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do not dilate so readily because the peritoneum which forms their outer covering lies over their whole surface with the exception of the posterior border, at which their vessels and nerves enter. After having described a number of convolutions placed one above the other, the small intestines terminate at the ileo-coecal valve, a fresh narrowing of great interest to the Physiological Physician.

The large intestine is seperated from the inferior portion of the small one, called Ileon; by this valve which is simply a fold of the internal membrane, the free border of which corresponds to the coecum, a kind of enlargement or sac, whence begins the Colon.

The Colon constitutes the major part of the large intestines. Its mucous coat is thicker than that of the small intestines, partaking of cerebral, spinal and ganglionic nerves of the

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duodenum, stomach, kidnies, bladder and vagina, must be endowed with more sensibility than the floating portion of the small intestine, which only communicates with the brain by the small cords that connect the great sympathetic with that organ.

The digestive canal, properly so called begins at the superior or Cardiac orifice of the stomach, and terminates at the Anus. The parieties of the digestive tube are muscular, a mucus coat lines its inside, and lastly a serous or peritoneal is reflected over it, forming an external covering.

The Mucus tissue exhibits follicles or glands placed between it and the muscular coat, the use of which is to secrete a fluid which passes through this membrane by means of excretory ducts, and lubricates the ~~pouls~~ interior of the digestive canal.

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The muscular coat may be considered a long hollow muscle formed by two layers of fibres, the one set longitudinal and the other circular. This coat is closely united to the mucous membrane by a cellular tissue.

After this hurried view of the digestive organs, let us turn to the process itself. The aliments having reached the stomach are there submitted to the process called assimilation. The gastric surface being irritable, and stimulated by the aliments, furnishes them with a fluid from its own tissue, and it also invites those of the liver, pancreas, and salivary glands. The food remains in the stomach a longer or shorter space of time, according as by its nature it yields more or less readily to the changes which it has to undergo. The food is now transformed into a grayish substance called "chyme". It is acid, and at length becomes

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fit to pass the inferior or pyloric orifice of the stomach, and then commences what is called second digestion.

The food on quitting the stomach enters the duodenum, and there experiences new changes as essential as those which were produced upon it by digestion in the stomach. The irritation produced on the parieties of the duodenum when distended by the chyme is propagated to the gall bladder, by the cystic and common ducts. Its parieties then contract and oblige the bile to flow along the cystic duct into the "ductus communis choledocus." The cystic and hepatic bile being mixed in the "ductus communis choledocus" undergoes a change before entering the duodenum by uniting with the fluid of the pancreas, yet nothing precise is known in regard to the pancreatic fluid.

The combination of the united pancreatic

and biliary fluids entering the duodenum and poured on the chyme animalizes it ~~and~~ renders it fluid, separates the chylous from the excrementitious part, and precipitates whatever is not nutritious. Here the bile also undergoes a change; its oily, bitter and colored portion passes along with the excrements sheathing them, and imparts to them the stimulating qualities necessary to excite the action of the digestive tube. Its saline and albuminous particles combine with the chyle, become incorporated with it, are absorbed along with it and pass into the circulation. We may now notice in the alimentary mass, after having undergone this combination, two very distinct parts. The one is a whitish milky substance which swims to the surface. The other is a yellowish pulp in which, when digestion is healthy it is not easy to distinguish

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the nature of the food.

The alimentary mass having remained in the duodenum a certain length of time, and having separated into the two parts of chylous and excrementitious, passes into the Jejunum and ileon. The chyle presenting the appearance of a milky liquor is carried to the circumference of the mass moving through the intestines and is directed towards the mucus membrane, to which it seems to adhere — This membrane absorbs it like a kind of sponge, and causes it to reach the chylous veins, commonly called lacteal vessels.

These chylous absorbants are in greater number on the surface of the valvulæ conniventes which are circular folds of the inner membrane, and these are at a greater distance from each other, the nearer they

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are to the termination of the Ileum, After having traversed the long channel of the intestines, the product of digestion approaches the ileo-coecal valve, this point of narrowing retards somewhat its passage, and gives time for absorption to deprive it of the major part of chyle which is retained. The transit is therefore slowly performed here, and when effected the matter has obtained the character of excrement. Still it is tolerably fluid in the coecum, and the ascending and transverse portions of the colon, and is much more dense in the sigmoid flexure, and when accumulated in the rectum to solicit the act of defaecation, it presents the appearance which we see after issue

The fluids absorbed with the chyle and taken up by the Lymphatics of the intestinal tube dilute the nutritive part ~~ex~~

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extracted from the solid aliment, and serve it as a vehicle.

When they have reached the mass of the blood, they increase its quantity, diminish its viscidity, and render it more fluid, going along with it throughout the whole course of the circulation, supplying moisture to all parts of the body they become loaded with molecules detached from them by the vital motion. They conveyed to the urinary organs, they become disengaged from the rest of the fluids, carrying along with them a number of products of every kind which by a longer stay in the animal economy would occasion a manifest disturbance in the exercise of the functions.